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#25

SEQUENCE LISTING

<110> Brugliera, Filippa
Holton, Timothy A.
Michael, Michael Z.

<120> GENETIC SEQUENCES ENCODING FLAVONOID PATHWAY ENZYMES
AND USES THEREFOR

<130> 11658

<140> 09/142,108

<141> 1998-09-01

<150> PN8386

<151> 1996-03-01

<160> 45

<170> PatentIn Ver. 2.1

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Ala	His	Thr	Tyr	Asp	Trp	Ala	Leu	Ala	Asp	Gly	Leu	Met	Pro	Glu	Lys		
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Leu	Asn	Met	Asp	Glu	Ala	Tyr	Gly	Leu	Thr	Leu	Gln	Arg	Lys	Val	Pro		
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Leu	Asn	Gly	Pro	Pro	Asp	Pro	Val	Gly	Phe	Ser	Ala	Arg	Val				
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Lys	Tyr	Gly	Pro	Leu	Leu	Tyr	Met	Arg	Leu	Gly	Tyr	Val	Asp	Val	Val
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Lys	Pro	Glu	Arg	Phe	Leu	Pro	Gly	Gly	Glu	Lys	Pro	Asn	Val	Asp	Val
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Met Leu Arg Lys Ile Cys Ala Leu His Leu Phe Ser Ala Lys Ala Leu	
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Asn Asp Phe Thr His Val Arg Gln Asp Glu Val Gly Ile Leu Thr Arg	
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Val Leu Ala Asp Ala Gly Glu Thr Pro Leu Lys Leu Gly Gln Met Met	
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Asn Thr Cys Ala Thr Asn Ala Ile Ala Arg Val Met Leu Gly Arg Arg	
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Lys Leu His Leu Arg Phe Asp Ser Phe Leu Ser Lys Ile Leu Gly Asp	
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His Lys Ile Asn Ser Ser Asp Glu Thr Lys Gly His Ser Asp Leu Leu	
265 270 275 280	
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Asn Met Leu Ile Ser Leu Lys Asp Ala Asp Asp Ala Glu Gly Gly Arg	
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Leu Thr Asp Val Glu Ile Lys Ala Leu Leu Leu Asn Leu Phe Ala Ala	
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315 320 325	
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Val Arg His Pro Glu Ile Leu Ala Gln Val Gln Lys Glu Leu Asp Ser	
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 Thr Pro Leu Ser Leu Pro Arg Ile Ala His Glu Ser Cys Glu Val Asn
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 Gly Tyr Leu Ile Pro Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ala
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 Asp Gly Gly Ser Leu Thr Asp Thr Glu Ile Lys Ala Leu Leu Leu Asn
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 Ile Ala Glu Leu Ile Arg His Pro Asp Ile Met Val Lys Ala Gln Glu
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 Glu Leu Asp Ile Val Val Gly Arg Asp Arg Pro Val Asn Glu Ser Asp
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 Leu His Pro Pro Thr Pro Leu Ser Leu Pro His Ile Ala Ser Glu Ser
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 Cys Glu Ile Asn Gly Tyr His Ile Pro Lys Gly Ser Thr Leu Phe Asp
 115 120 125

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 Gly His Met Gly Leu Gly Arg Asp Pro Asp Gln Trp Ser Asp Pro Leu
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 Asp Val Lys Gly Ser Asp Phe Glu Leu Ile Pro Phe Gly Ala Gly Arg

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195 200 205																				
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Leu Gly Arg Glu Met Ile Gly Arg Arg Leu Phe Gly Ala Asp Ala Asp	
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His Lys Ala Asp Glu Phe Arg Ser Met Val Thr Glu Met Met Ala Leu	
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Ala Gly Val Phe Asn Ile Gly Asp Phe Val Pro Ser Leu Asp Trp Leu	
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Ala	Leu	Leu														
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Gly	Thr	Asp	Thr	Ser	Ala	Ser	Thr	Val	Asp	Trp	Ala	Ile	Ala	Glu	Leu	
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Ile	Arg	His	Pro	Asp	Ile	Met	Val	Lys	Ala	Gln	Glu	Glu	Leu	Asp	Ile	
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Pro	Tyr	Leu	Gln													
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Leu	Leu	Thr	Asn	Ile	Trp	Ala	Ile	Ala	Arg	Asp	Pro	Asp	Gln	Trp	Ser	
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gac	ccg	tta	gca	ttt	aaa	ccc	gag	aga	ttc	tta	ccc	ggg	ggg	gaa	aaa	3627
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cag ttt ctt acg gcg acg ttg gtt caa gga ttt gat tgg gaa tta gct Gln Phe Leu Thr Ala Thr Leu Val Gln Gly Phe Asp Trp Glu Leu Ala 105 110 115	3771
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Leu Pro Pro Gly Pro Asn Pro Trp Pro Ile Ile Gly Asn Leu Pro His
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Met Gly Thr Lys Pro His Arg Thr Leu Ser Ala Met Val Thr Thr Tyr
50 55 60
Gly Pro Ile Leu His Leu Arg Leu Gly Phe Val Asp Val Val Val Ala
65 70 75 80
Ala Ser Lys Ser Val Ala Glu Gln Phe Leu Lys Ile His Asp Ala Asn
85 90 95
Phe Ala Ser Arg Pro Pro Asn Ser Gly Ala Lys His Met Ala Tyr Asn
100 105 110
Tyr Gln Asp Leu Val Phe Ala Pro Tyr Gly His Arg Trp Arg Leu Leu
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35 40 45
Lys Ala Asp Glu Phe Arg Ser Met Val Thr Glu Met Met Ala Leu Ala
50 55 60
Gly Val Phe Asn Ile Gly Asp Phe Val Pro Ser Leu Asp Trp Leu Asp
65 70 75 80
Leu Gln Gly Val Ala Gly Lys Met Lys Arg Leu His Lys Arg Phe Asp
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Ala Phe Leu Ser Ser Ile Leu Lys Glu His Glu Met Asn Gly Gln Asp

100 105 110

Gln Lys His Thr Asp Met Leu Ser Thr Leu Ile Ser Leu Lys Gly Thr
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Leu Leu Leu
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Pro Asp Gln Trp Ser Asp Pro Leu Ala Phe Lys Pro Glu Arg Phe Leu
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Pro Gly Gly Glu Lys Ser Gly Val Asp Val Lys Gly Ser Asp Phe Glu
65 70 75 80

Leu Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Leu Ser Leu
85 90 95

Gly Leu Arg Thr Ile Gln Phe Leu Thr Ala Thr Leu Val Gln Gly Phe
100 105 110

Asp Trp Glu Leu Ala Gly Gly Val Thr Pro Glu Lys Leu Asn Met Glu
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Phe Ala Val Phe Leu Phe Arg Leu Leu Phe Ser Gly Lys Ser Gln Arg 25
15 20

cac tcg ctc cct ctc cct cct ggc ccc aaa cca tgg ccg gtg gtt ggc 147
His Ser Leu Pro Leu Pro Pro Gly Pro Lys Pro Trp Pro Val Val Gly 40
30 35

aac tta cct cac ttg ggc ccc ttc ccg cac cac tcc atc gcg gag ttg 195
Asn Leu Pro His Leu Gly Pro Phe Pro His His Ser Ile Ala Glu Leu 55
45 50

gcg aag aaa cac ggg ccg ctc atg cac ctc cgc ctc ggc tac gtt gac 243
Ala Lys Lys His Gly Pro Leu Met His Leu Arg Leu Gly Tyr Val Asp 70
60 65

gta gtc gtg gcg gca tca gca tcc gta gcg gcc cag ttc ttg aag act 291
Val Val Val Ala Ala Ser Ala Ser Val Ala Ala Gln Phe Leu Lys Thr 90
75 80 85

cac gac gcc aat ttc tcc agc cga ccg ccc aac tcc ggc gcc aag cac 339
His Asp Ala Asn Phe Ser Ser Arg Pro Pro Asn Ser Gly Ala Lys His 105
95 100

ctc gcc tat aac tac cag gac ctc gtg ttc agg ccg tac ggt cca cgc 387
Leu Ala Tyr Asn Tyr Gln Asp Leu Val Phe Arg Pro Tyr Gly Pro Arg 120
110 115 120

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Trp Arg Met Phe Arg Lys Ile Ser Ser Val His Leu Phe Ser Gly Lys 135
125 130

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gcg	cat	gcc	ttg	gca	aat	tca	ggg	tca	aag	gta	gtg	aac	ctg	gcg	caa	531
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cgg	agg	gtt	ttc	ggc	gac	ggc	agc	gga	ggc	gac	gat	ccg	aag	gcg	gac	627
Arg	Arg	Val	Phe	Gly	Asp	Gly	Ser	Gly	Gly	Asp	Asp	Pro	Lys	Ala	Asp	
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Thr	Ala	Ile	Val	Glu	Asp	His	Lys	Lys	Gly	Ser	Gly	Thr	Ala	Gly	His	
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Glu	Gly	Gly	Lys	Leu	Thr	Asp	Thr	Glu	Ile	Lys	Ala	Leu	Leu	Leu	Asn	
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Met	Phe	Thr	Ala	Gly	Thr	Asp	Thr	Ser	Ser	Ser	Thr	Val	Glu	Trp	Ala	
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Glu	Leu	Asp	Asp	Phe	Val	Gly	His	Asp	Arg	Leu	Val	Thr	Glu	Ser	Asp	
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 Asn Val Trp Ala Ile Ser Arg Asp Pro Ala Glu Trp Ala Asp Pro Leu
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 415 420 425

gat att aga gga aac gat ttt gaa gtc ata ccc ttc ggt gcc ggg cga 1347
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 430 435 440

aga ata tgt gcc ggg atg agc ttg ggc ctg cgt atg gtc cat tta atg 1395
 Arg Ile Cys Ala Gly Met Ser Leu Gly Leu Arg Met Val His Leu Met
 445 450 455

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 Thr Ala Glu Lys Leu Asn Met Asp Glu Ala Tyr Gly Leu Thr Leu Gln
 475 480 485 490

cga gct gca ccg tta atg gtg cac ccg cgc acc agg ctg gcc cca cag 1539
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Ser	Gly	Ser	Lys	Val	Val	Asn	Leu	Ala	Gln	Leu	Leu	Asn	Leu	Cys	Thr
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Val	Asn	Ala	Leu	Gly	Arg	Val	Met	Val	Gly	Arg	Arg	Val	Phe	Gly	Asp
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Pro	Ser	Leu	Glu	Trp	Leu	Asp	Leu	Gln	Gly	Val	Ala	Ser	Lys	Met	Lys
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Lys	Leu	His	Lys	Arg	Phe	Asp	Asp	Phe	Leu	Thr	Ala	Ile	Val	Glu	Asp
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Arg	Asp	Pro	Ala	Glu	Trp	Ala	Asp	Pro	Leu	Glu	Phe	Lys	Pro	Glu	Arg
				405					410					415	
Phe	Leu	Pro	Gly	Gly	Glu	Lys	Pro	Asn	Val	Asp	Ile	Arg	Gly	Asn	Asp
			420					425					430		
Phe	Glu	Val	Ile	Pro	Phe	Gly	Ala	Gly	Arg	Arg	Ile	Cys	Ala	Gly	Met
		435					440					445			
Ser	Leu	Gly	Leu	Arg	Met	Val	His	Leu	Met	Thr	Ala	Thr	Leu	Val	His
	450					455					460				
Ala	Phe	Asn	Trp	Ala	Leu	Ala	Asp	Gly	Leu	Thr	Ala	Glu	Lys	Leu	Asn
465					470					475					480
Met	Asp	Glu	Ala	Tyr	Gly	Leu	Thr	Leu	Gln	Arg	Ala	Ala	Pro	Leu	Met
				485					490					495	
Val	His	Pro	Arg	Thr	Arg	Leu	Ala	Pro	Gln	Ala	Tyr	Lys	Thr	Ser	Ser
			500					505					510		
Ser															

<211> 1660
 <212> DNA
 <213> Chrysanthemum

<220>
 <221> CDS
 <222> (4)..(1530)

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<400> 16
aaa atg acc att tta gct ttc gta ttt tac gcc ctc atc ctc ggg tca 48
  Met Thr Ile Leu Ala Phe Val Phe Tyr Ala Leu Ile Leu Gly Ser
    1                    5                10                15

gta ctc tat gta ttt ctt aac tta agt tca cgt aaa tcc gcc aga ctc 96
Val Leu Tyr Val Phe Leu Asn Leu Ser Ser Arg Lys Ser Ala Arg Leu
                20                25                30

cca ccc ggg cca aca cca tgg cct ata gtc ggg aac tta cca cac ctt 144
Pro Pro Gly Pro Thr Pro Trp Pro Ile Val Gly Asn Leu Pro His Leu
                35                40                45

ggc cca atc cca cac cac gca ctc gcg gcc tta gcc aag aag tac ggg 192
Gly Pro Ile Pro His His Ala Leu Ala Ala Leu Ala Lys Lys Tyr Gly
                50                55                60

cca ttg atg cac ctg cgg ctc ggg tgt gtg gac gtg gtt gtg gcc gcg 240
Pro Leu Met His Leu Arg Leu Gly Cys Val Asp Val Val Val Ala Ala
    65                70                75

tct gct tcc gta gct gca cag ttt tta aaa gtt cac gac gca aat ttt 288
Ser Ala Ser Val Ala Ala Gln Phe Leu Lys Val His Asp Ala Asn Phe
    80                85                90                95

gct agt agg ccg cca aat tct ggc gcg aaa cat gtg gcg tat aat tat 336
Ala Ser Arg Pro Pro Asn Ser Gly Ala Lys His Val Ala Tyr Asn Tyr
                100                105                110

cag gat ctt gtg ttt gca cct tat ggt cca agg tgg cgt ttg tta agg 384
Gln Asp Leu Val Phe Ala Pro Tyr Gly Pro Arg Trp Arg Leu Leu Arg
                115                120                125

aag att tgt tcg gtc cat ttg ttt tct gct aaa gca ctt gat gat ttt 432
Lys Ile Cys Ser Val His Leu Phe Ser Ala Lys Ala Leu Asp Asp Phe
                130                135                140

cgt cat gtt cga cag gag gag gta gca gtc cta acc cgc gta cta ctg 480
Arg His Val Arg Gln Glu Glu Val Ala Val Leu Thr Arg Val Leu Leu
    145                150                155

agt gct gga aac tca ccg gta cag ctt ggc caa cta ctt aac gtg tgt 528
Ser Ala Gly Asn Ser Pro Val Gln Leu Gly Gln Leu Leu Asn Val Cys
    160                165                170                175

gcc aca aac gcc tta gca cgg gta atg tta ggt agg aga gtt ttc gga 576
Ala Thr Asn Ala Leu Ala Arg Val Met Leu Gly Arg Arg Val Phe Gly
                180                185                190

gac gga att gac agg tca gcc aat gag ttc aaa gat atg gta gta gag 624
Asp Gly Ile Asp Arg Ser Ala Asn Glu Phe Lys Asp Met Val Val Glu
                195                200                205

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tta atg gta tta gca gga gaa ttt aac ctt ggt gac ttt att cct gta	672
Leu Met Val Leu Ala Gly Glu Phe Asn Leu Gly Asp Phe Ile Pro Val	
210 215 220	
ctt gac cta ttc gac cta caa ggc att act aaa aaa atg aag aag ctt	720
Leu Asp Leu Phe Asp Leu Gln Gly Ile Thr Lys Lys Met Lys Lys Leu	
225 230 235	
cat gtt cgg ttc gat tca ttt ctt agt aag atc gtt gag gag cat aaa	768
His Val Arg Phe Asp Ser Phe Leu Ser Lys Ile Val Glu Glu His Lys	
240 245 250 255	
acg gca cct ggt ggg ttg ggt cat act gat ttg ctg agc acg ttg att	816
Thr Ala Pro Gly Gly Leu Gly His Thr Asp Leu Leu Ser Thr Leu Ile	
260 265 270	
tca ctt aaa gat gat gct gat att gaa ggt ggg aag ctt aca gat act	864
Ser Leu Lys Asp Asp Ala Asp Ile Glu Gly Gly Lys Leu Thr Asp Thr	
275 280 285	
gaa atc aaa gct ttg ctt ctg aat tta ttc gct gcg gga aca gac aca	912
Glu Ile Lys Ala Leu Leu Leu Asn Leu Phe Ala Ala Gly Thr Asp Thr	
290 295 300	
tcc tct agt aca gta gaa tgg gca ata gcc gaa ctc att cgt cat cca	960
Ser Ser Ser Thr Val Glu Trp Ala Ile Ala Glu Leu Ile Arg His Pro	
305 310 315	
caa ata tta aaa caa gcc cga gaa gag ata gac gct gta gtt ggt caa	1008
Gln Ile Leu Lys Gln Ala Arg Glu Glu Ile Asp Ala Val Val Gly Gln	
320 325 330 335	
gac cgg ctt gta aca gaa ttg gac ttg agc caa cta aca tac ctc cag	1056
Asp Arg Leu Val Thr Glu Leu Asp Leu Ser Gln Leu Thr Tyr Leu Gln	
340 345 350	
gct ctt gtg aaa gag gtg ttt agg ctc cac cct tca acg cca ctc tcc	1104
Ala Leu Val Lys Glu Val Phe Arg Leu His Pro Ser Thr Pro Leu Ser	
355 360 365	
tta cca aga ata tca tcc gag agt tgt gag gtc gat ggg tat tat atc	1152
Leu Pro Arg Ile Ser Ser Glu Ser Cys Glu Val Asp Gly Tyr Tyr Ile	
370 375 380	
cct aag gga tcc aca ctc ctc gtt aac gtg tgg gcc att gcg cga gac	1200
Pro Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ala Ile Ala Arg Asp	
385 390 395	
cca aaa atg tgg gcg gat cct ctt gaa ttt agg cct tct cgg ttt tta	1248
Pro Lys Met Trp Ala Asp Pro Leu Glu Phe Arg Pro Ser Arg Phe Leu	
400 405 410 415	
ccc ggg gga gaa aag ccc ggt gct gat gtt agg gga aat gat ttt gaa	1296
Pro Gly Gly Glu Lys Pro Gly Ala Asp Val Arg Gly Asn Asp Phe Glu	
420 425 430	
gtt ata cca ttt ggg gca gga cga agg att tgt gcg ggt atg agc cta	1344
Val Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Met Ser Leu	
435 440 445	

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ggc ttg aga atg gtc cag ttg ctc att gca aca ttg gtc caa act ttt 1392
Gly Leu Arg Met Val Gln Leu Leu Ile Ala Thr Leu Val Gln Thr Phe
450 455 460

gat tgg gaa ctg gct aac ggg tta gag ccg gag atg ctc aac atg gaa 1440
Asp Trp Glu Leu Ala Asn Gly Leu Glu Pro Glu Met Leu Asn Met Glu
465 470 475

gaa gcg tat gga ttg acc ctt caa cgg gct gca ccc ttg atg gtt cac 1488
Glu Ala Tyr Gly Leu Thr Leu Gln Arg Ala Ala Pro Leu Met Val His
480 485 490 495

ccg aag ccg agg tta gct ccc cac gta tat gaa agt att taa 1530
Pro Lys Pro Arg Leu Ala Pro His Val Tyr Glu Ser Ile
500 505

ggactagtttt ctcttttgcc tttttgtttc gcaaagggtta atgaataaac gatttcatga 1590

ctcagatagt tatgtaaaca atttgtgttg ctgtttatat atttatctat ttttctagaa 1650

caaaaaaaaaa 1660

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<210> 17
 <211> 508
 <212> PRT
 <213> Chrysanthemum

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<400> 17
Met Thr Ile Leu Ala Phe Val Phe Tyr Ala Leu Ile Leu Gly Ser Val
1 5 10 15
Leu Tyr Val Phe Leu Asn Leu Ser Ser Arg Lys Ser Ala Arg Leu Pro
20 25 30
Pro Gly Pro Thr Pro Trp Pro Ile Val Gly Asn Leu Pro His Leu Gly
35 40 45
Pro Ile Pro His His Ala Leu Ala Ala Leu Ala Lys Lys Tyr Gly Pro
50 55 60
Leu Met His Leu Arg Leu Gly Cys Val Asp Val Val Val Ala Ala Ser
65 70 75 80
Ala Ser Val Ala Ala Gln Phe Leu Lys Val His Asp Ala Asn Phe Ala
85 90 95
Ser Arg Pro Pro Asn Ser Gly Ala Lys His Val Ala Tyr Asn Tyr Gln
100 105 110
Asp Leu Val Phe Ala Pro Tyr Gly Pro Arg Trp Arg Leu Leu Arg Lys
115 120 125
Ile Cys Ser Val His Leu Phe Ser Ala Lys Ala Leu Asp Asp Phe Arg
130 135 140
His Val Arg Gln Glu Glu Val Ala Val Leu Thr Arg Val Leu Leu Ser
145 150 155 160
Ala Gly Asn Ser Pro Val Gln Leu Gly Gln Leu Leu Asn Val Cys Ala
165 170 175
Thr Asn Ala Leu Ala Arg Val Met Leu Gly Arg Arg Val Phe Gly Asp
180 185 190
Gly Ile Asp Arg Ser Ala Asn Glu Phe Lys Asp Met Val Val Glu Leu
195 200 205

Met Val Leu Ala Gly Glu Phe Asn Leu Gly Asp Phe Ile Pro Val Leu
210 215 220
Asp Leu Phe Asp Leu Gln Gly Ile Thr Lys Lys Met Lys Lys Leu His
225 230 235 240

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Val Arg Phe Asp Ser Phe Leu Ser Lys Ile Val Glu Glu His Lys Thr
 245 250 255
 Ala Pro Gly Gly Leu Gly His Thr Asp Leu Leu Ser Thr Leu Ile Ser
 260 265 270
 Leu Lys Asp Asp Ala Asp Ile Glu Gly Gly Lys Leu Thr Asp Thr Glu
 275 280 285
 Ile Lys Ala Leu Leu Leu Asn Leu Phe Ala Ala Gly Thr Asp Thr Ser
 290 295 300
 Ser Ser Thr Val Glu Trp Ala Ile Ala Glu Leu Ile Arg His Pro Gln
 305 310 315 320
 Ile Leu Lys Gln Ala Arg Glu Glu Ile Asp Ala Val Val Gly Gln Asp
 325 330 335
 Arg Leu Val Thr Glu Leu Asp Leu Ser Gln Leu Thr Tyr Leu Gln Ala
 340 345 350
 Leu Val Lys Glu Val Phe Arg Leu His Pro Ser Thr Pro Leu Ser Leu
 355 360 365
 Pro Arg Ile Ser Ser Glu Ser Cys Glu Val Asp Gly Tyr Tyr Ile Pro
 370 375 380
 Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ala Ile Ala Arg Asp Pro
 385 390 395 400
 Lys Met Trp Ala Asp Pro Leu Glu Phe Arg Pro Ser Arg Phe Leu Pro
 405 410 415
 Gly Gly Glu Lys Pro Gly Ala Asp Val Arg Gly Asn Asp Phe Glu Val
 420 425 430
 Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Met Ser Leu Gly
 435 440 445
 Leu Arg Met Val Gln Leu Leu Ile Ala Thr Leu Val Gln Thr Phe Asp
 450 455 460
 Trp Glu Leu Ala Asn Gly Leu Glu Pro Glu Met Leu Asn Met Glu Glu
 465 470 475 480
 Ala Tyr Gly Leu Thr Leu Gln Arg Ala Ala Pro Leu Met Val His Pro
 485 490 495
 Lys Pro Arg Leu Ala Pro His Val Tyr Glu Ser Ile
 500 505

<210> 18
 <211> 1815
 <212> DNA
 <213> Torenia

<220>
 <221> CDS
 <222> (107)..(1633)

<400> 18
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catacatcat caccgaatac gcacgctact accactgcga ttagcc atg agt ccc 115
 Met Ser Pro
 1

tta gcc ttg atg atc ata agt acc tta tta ggg ttt ctc cta tac cac 163
 Leu Ala Leu Met Ile Ile Ser Thr Leu Leu Gly Phe Leu Leu Tyr His
 5 10 15

tct ctt cgc tta cta ctc ttc tcc ggc caa ggt cgc cga cta cta cca 211

Ser	Leu	Arg	Leu	Leu	Leu	Phe	Ser	Gly	Gln	Gly	Arg	Arg	Leu	Leu	Pro		
20						25				30					35		
cca	ggt	cca	cgc	ccg	tgg	ccg	ctg	gtg	gga	aat	ctc	ccg	cac	tta	ggc	259	
Pro	Gly	Pro	Arg	Pro	Trp	Pro	Leu	Val	Gly	Asn	Leu	Pro	His	Leu	Gly		
				40					45					50			
ccg	aag	cca	cac	gcc	tcc	atg	gcc	gag	ctc	gcg	cga	gcc	tac	gga	ccc	307	
Pro	Lys	Pro	His	Ala	Ser	Met	Ala	Glu	Leu	Ala	Arg	Ala	Tyr	Gly	Pro		
			55					60					65				
ctc	atg	cac	cta	aag	atg	ggg	ttc	gtc	cac	gtc	gtg	gtg	gct	tcg	tcg	355	
Leu	Met	His	Leu	Lys	Met	Gly	Phe	Val	His	Val	Val	Val	Ala	Ser	Ser		
		70					75					80					
gcg	agc	gcg	gcg	gag	cag	tgc	ctg	agg	gtt	cac	gac	gcg	aat	ttc	ttg	403	
Ala	Ser	Ala	Ala	Glu	Gln	Cys	Leu	Arg	Val	His	Asp	Ala	Asn	Phe	Leu		
	85					90					95						
agc	agg	cca	ccc	aac	tcc	ggc	gcc	aag	cac	gtc	gct	tac	aac	tac	gag	451	
Ser	Arg	Pro	Pro	Asn	Ser	Gly	Ala	Lys	His	Val	Ala	Tyr	Asn	Tyr	Glu		
100					105					110					115		
gac	ttg	gtt	ttc	aga	ccg	tac	ggt	ccc	aag	tgg	agg	ctg	ttg	agg	aag	499	
Asp	Leu	Val	Phe	Arg	Pro	Tyr	Gly	Pro	Lys	Trp	Arg	Leu	Leu	Arg	Lys		
				120					125					130			
ata	tgc	gct	cag	cat	att	ttc	tcc	gtc	aag	gct	atg	gat	gac	ttc	agg	547	
Ile	Cys	Ala	Gln	His	Ile	Phe	Ser	Val	Lys	Ala	Met	Asp	Asp	Phe	Arg		
			135					140					145				
cgc	gtc	aga	gag	gaa	gag	gtg	gcc	atc	ctg	agt	cgc	gct	cta	gca	ggc	595	
Arg	Val	Arg	Glu	Glu	Glu	Val	Ala	Ile	Leu	Ser	Arg	Ala	Leu	Ala	Gly		
		150					155					160					
aaa	agg	gcc	gta	ccc	ata	ggc	caa	atg	ctc	aac	gtg	tgc	gcc	aca	aac	643	
Lys	Arg	Ala	Val	Pro	Ile	Gly	Gln	Met	Leu	Asn	Val	Cys	Ala	Thr	Asn		
	165					170					175						
gcc	cta	tct	cgc	gtc	atg	atg	ggg	cgg	cgc	gtg	gtg	ggc	cac	gcg	gat	691	
Ala	Leu	Ser	Arg	Val	Met	Met	Gly	Arg	Arg	Val	Val	Gly	His	Ala	Asp		
180					185					190					195		
gga	acc	aac	gac	gcc	aag	gcg	gag	gag	ttc	aaa	gcc	atg	gtc	gtc	gag	739	
Gly	Thr	Asn	Asp	Ala	Lys	Ala	Glu	Glu	Phe	Lys	Ala	Met	Val	Val	Glu		
				200					205				210				
ctc	atg	gtc	ctc	tcc	ggc	gtc	ttc	aac	atc	ggt	gat	ttc	atc	ccc	ttc	787	
Leu	Met	Val	Leu	Ser	Gly	Val	Phe	Asn	Ile	Gly	Asp	Phe	Ile	Pro	Phe		
			215					220					225				
ctc	gag	cct	ctc	gac	ttg	cag	gga	gtg	gct	tcc	aag	atg	aag	aaa	ctc	835	
Leu	Glu	Pro	Leu	Asp	Leu	Gln	Gly	Val	Ala	Ser	Lys	Met	Lys	Lys	Leu		
		230					235					240					
cac	gcg	cgg	ttc	gat	gca	ttc	ttg	acc	gag	att	gta	cga	gag	cgt	tgt	883	
His	Ala	Arg	Phe	Asp	Ala	Phe	Leu	Thr	Glu	Ile	Val	Arg	Glu	Arg	Cys		
	245					250					255						

cat ggg cag atc aac aac agt ggt gct cat cag gat gat ttg ctt agc	931
His Gly Gln Ile Asn Asn Ser Gly Ala His Gln Asp Asp Leu Leu Ser	
260 265 270 275	
acg ttg att tcg ttc aaa ggg ctt gac gat ggc gat ggt tcc agg ctc	979
Thr Leu Ile Ser Phe Lys Gly Leu Asp Asp Gly Asp Gly Ser Arg Leu	
280 285 290	
act gac aca gaa atc aag gcg ctg ctc ttg aac ctt ttg gac acg acg	1027
Thr Asp Thr Glu Ile Lys Ala Leu Leu Leu Asn Leu Leu Asp Thr Thr	
295 300 305	
tcg agc acg gtg gaa tgg gcc gta gcc gaa ctc cta cgc cac cct aag	1075
Ser Ser Thr Val Glu Trp Ala Val Ala Glu Leu Leu Arg His Pro Lys	
310 315 320	
aca tta gcc caa gtc cgg caa gag ctc gac tcg gtc gtg ggt aag aac	1123
Thr Leu Ala Gln Val Arg Gln Glu Leu Asp Ser Val Val Gly Lys Asn	
325 330 335	
agg ctc gtg tcc gag acc gat ctg aat cag ctg ccc tat cta caa gct	1171
Arg Leu Val Ser Glu Thr Asp Leu Asn Gln Leu Pro Tyr Leu Gln Ala	
340 345 350 355	
gtc gtc aaa gaa act ttc cgc ctc cat cct ccg acg ccg ctc tct cta	1219
Val Val Lys Glu Thr Phe Arg Leu His Pro Pro Thr Pro Leu Ser Leu	
360 365 370	
ccg aga ctc gcg gaa gat gat tgc gag atc gac gga tac ctc atc ccc	1267
Pro Arg Leu Ala Glu Asp Asp Cys Glu Ile Asp Gly Tyr Leu Ile Pro	
375 380 385	
aag ggc tcg acc ctt ctg gtg aac gtt tgg gcc ata gcc cgc gat ccc	1315
Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ala Ile Ala Arg Asp Pro	
390 395 400	
aag gtt tgg gcc gat ccg ttg gag ttt agg ccc gaa cga ttc ttg acg	1363
Lys Val Trp Ala Asp Pro Leu Glu Phe Arg Pro Glu Arg Phe Leu Thr	
405 410 415	
ggc gga gaa aag gcc gac gtc gat gtc aag ggg aac gat ttc gaa gtg	1411
Gly Gly Glu Lys Ala Asp Val Asp Val Lys Gly Asn Asp Phe Glu Val	
420 425 430 435	
ata ccg ttc ggg gcg ggt cgt agg atc tgc gct ggc gtt ggc ttg gga	1459
Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Val Gly Leu Gly	
440 445 450	
ata cgt atg gtc caa ctg ttg acg gcg agt ttg atc cat gca ttc gat	1507
Ile Arg Met Val Gln Leu Leu Thr Ala Ser Leu Ile His Ala Phe Asp	
455 460 465	
ctg gac ctt gct aat ggg ctt ttg gcc caa aat ctg aac atg gaa gaa	1555
Leu Asp Leu Ala Asn Gly Leu Leu Ala Gln Asn Leu Asn Met Glu Glu	
470 475 480	
gca tat ggg ctt acg cta caa cgg gct gag cct ttg ttg gtc cac cct	1603
Ala Tyr Gly Leu Thr Leu Gln Arg Ala Glu Pro Leu Leu Val His Pro	
485 490 495	

agg ccg cgg ttg gcc act cat gtc tat taa ttaaattagg cctaaactac 1653
 Arg Pro Arg Leu Ala Thr His Val Tyr
 500 505

gatgaatgac ccatttaacg ttaataagag ttttcaattt atgtgagttt gcatggtatg 1713

gtatggtatg gtgcttgtaa taaattgtat ctggttaggtg tgttcattga tgataaatct 1773

agtttgtact gctgctcaaa aaaaaaaaaa aaaaaaaaaa aa 1815

<210> 19
 <211> 508
 <212> PRT
 <213> Torenia

<400> 19
 Met Ser Pro Leu Ala Leu Met Ile Ile Ser Thr Leu Leu Gly Phe Leu
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 Leu Tyr His Ser Leu Arg Leu Leu Leu Phe Ser Gly Gln Gly Arg Arg
 20 25 30
 Leu Leu Pro Pro Gly Pro Arg Pro Trp Pro Leu Val Gly Asn Leu Pro
 35 40 45
 His Leu Gly Pro Lys Pro His Ala Ser Met Ala Glu Leu Ala Arg Ala
 50 55 60
 Tyr Gly Pro Leu Met His Leu Lys Met Gly Phe Val His Val Val Val
 65 70 75 80
 Ala Ser Ser Ala Ser Ala Ala Glu Gln Cys Leu Arg Val His Asp Ala
 85 90 95
 Asn Phe Leu Ser Arg Pro Pro Asn Ser Gly Ala Lys His Val Ala Tyr
 100 105 110
 Asn Tyr Glu Asp Leu Val Phe Arg Pro Tyr Gly Pro Lys Trp Arg Leu
 115 120 125
 Leu Arg Lys Ile Cys Ala Gln His Ile Phe Ser Val Lys Ala Met Asp
 130 135 140
 Asp Phe Arg Arg Val Arg Glu Glu Glu Val Ala Ile Leu Ser Arg Ala
 145 150 155 160
 Leu Ala Gly Lys Arg Ala Val Pro Ile Gly Gln Met Leu Asn Val Cys
 165 170 175
 Ala Thr Asn Ala Leu Ser Arg Val Met Met Gly Arg Arg Val Val Gly
 180 185 190
 His Ala Asp Gly Thr Asn Asp Ala Lys Ala Glu Glu Phe Lys Ala Met
 195 200 205
 Val Val Glu Leu Met Val Leu Ser Gly Val Phe Asn Ile Gly Asp Phe
 210 215 220
 Ile Pro Phe Leu Glu Pro Leu Asp Leu Gln Gly Val Ala Ser Lys Met
 225 230 235 240
 Lys Lys Leu His Ala Arg Phe Asp Ala Phe Leu Thr Glu Ile Val Arg
 245 250 255
 Glu Arg Cys His Gly Gln Ile Asn Asn Ser Gly Ala His Gln Asp Asp
 260 265 270
 Leu Leu Ser Thr Leu Ile Ser Phe Lys Gly Leu Asp Asp Gly Asp Gly
 275 280 285
 Ser Arg Leu Thr Asp Thr Glu Ile Lys Ala Leu Leu Asn Leu Leu
 290 295 300
 Asp Thr Thr Ser Ser Thr Val Glu Trp Ala Val Ala Glu Leu Leu Arg
 305 310 315 320
 His Pro Lys Thr Leu Ala Gln Val Arg Gln Glu Leu Asp Ser Val Val
 325 330 335

Gly Lys Asn Arg Leu Val Ser Glu Thr Asp Leu Asn Gln Leu Pro Tyr
 340 345 350
 Leu Gln Ala Val Val Lys Glu Thr Phe Arg Leu His Pro Pro Thr Pro
 355 360 365
 Leu Ser Leu Pro Arg Leu Ala Glu Asp Asp Cys Glu Ile Asp Gly Tyr
 370 375 380
 Leu Ile Pro Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ala Ile Ala
 385 390 395 400
 Arg Asp Pro Lys Val Trp Ala Asp Pro Leu Glu Phe Arg Pro Glu Arg
 405 410 415
 Phe Leu Thr Gly Gly Glu Lys Ala Asp Val Asp Val Lys Gly Asn Asp
 420 425 430
 Phe Glu Val Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Val
 435 440 445
 Gly Leu Gly Ile Arg Met Val Gln Leu Leu Thr Ala Ser Leu Ile His
 450 455 460
 Ala Phe Asp Leu Asp Leu Ala Asn Gly Leu Leu Ala Gln Asn Leu Asn
 465 470 475 480
 Met Glu Glu Ala Tyr Gly Leu Thr Leu Gln Arg Ala Glu Pro Leu Leu
 485 490 495
 Val His Pro Arg Pro Arg Leu Ala Thr His Val Tyr
 500 505

<210> 20
 <211> 1824
 <212> DNA
 <213> Jap. Morning Glory

<220>
 <221> CDS
 <222> (2)..(1555)

<400> 20
 g agc tta acc tta att ttc tgc act tta gtt ttt gca atc ttt cta tat 49
 Ser Leu Thr Leu Ile Phe Cys Thr Leu Val Phe Ala Ile Phe Leu Tyr
 1 5 10 15

 ttt ctt att ctc agg gtg aaa cag cgt tac cct tta cct ctc cca ccc 97
 Phe Leu Ile Leu Arg Val Lys Gln Arg Tyr Pro Leu Pro Leu Pro Pro
 20 25 30

 gga cca aaa cca tgg ccg gtg tta gga aac ctt ccc cac ctg ggc aag 145
 Gly Pro Lys Pro Trp Pro Val Leu Gly Asn Leu Pro His Leu Gly Lys
 35 40 45

 aag cct cac cag tcg att gcg gcc atg gct gag agg tac ggc ccc ctc 193
 Lys Pro His Gln Ser Ile Ala Ala Met Ala Glu Arg Tyr Gly Pro Leu
 50 55 60

 atg cac ctc cgc cta gga ttc gtg gac gtg gtt gtg gcc gcc tcc gcc 241
 Met His Leu Arg Leu Gly Phe Val Asp Val Val Val Ala Ala Ser Ala
 65 70 75 80

 gcc gtg gcc gct cag ttc ttg aaa gtt cac gac tcg aac ttc tcc aac 289
 Ala Val Ala Ala Gln Phe Leu Lys Val His Asp Ser Asn Phe Ser Asn
 85 90 95

 cgg ccg ccg aac tcc ggc gcg gaa cac att gct tat aac tat caa gac 337

Arg	Pro	Pro	Asn	Ser	Gly	Ala	Glu	His	Ile	Ala	Tyr	Asn	Tyr	Gln	Asp		
			100					105					110				
ctc	gtc	ttc	gcg	ccc	tac	ggc	ccg	cgg	tgg	cgc	atg	ctt	agg	aag	atc	385	
Leu	Val	Phe	Ala	Pro	Tyr	Gly	Pro	Arg	Trp	Arg	Met	Leu	Arg	Lys	Ile		
		115					120					125					
acc	tcc	gtg	cat	ctc	ttc	tcg	gcc	aag	gcg	ttg	gat	gac	ttc	tgc	cat	433	
Thr	Ser	Val	His	Leu	Phe	Ser	Ala	Lys	Ala	Leu	Asp	Asp	Phe	Cys	His		
	130					135					140						
gtt	cgc	cag	gaa	gag	gtt	gca	act	ctg	aca	cgc	agt	cta	gca	agt	gca	481	
Val	Arg	Gln	Glu	Glu	Val	Ala	Thr	Leu	Thr	Arg	Ser	Leu	Ala	Ser	Ala		
145					150				155						160		
ggc	aaa	act	cca	gta	aaa	cta	ggg	cag	tta	cta	aac	gtg	tgc	acc	acg	529	
Gly	Lys	Thr	Pro	Val	Lys	Leu	Gly	Gln	Leu	Leu	Asn	Val	Cys	Thr	Thr		
			165					170						175			
aac	gcc	cta	gct	cgt	gta	atg	cta	ggg	cgg	aag	gtc	ttt	aat	gac	gga	577	
Asn	Ala	Leu	Ala	Arg	Val	Met	Leu	Gly	Arg	Lys	Val	Phe	Asn	Asp	Gly		
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Gly	Ser	Lys	Ser	Asp	Pro	Lys	Ala	Glu	Glu	Phe	Lys	Ser	Met	Val	Glu		
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Glu	Met	Met	Val	Leu	Ala	Gly	Ser	Phe	Asn	Ile	Gly	Asp	Phe	Ile	Pro		
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Leu	His	Ala	Arg	Phe	Asp	Ala	Phe	Leu	Asn	Thr	Ile	Leu	Glu	Glu	His		
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Lys	Cys	Val	Asn	Asn	Gln	His	Thr	Thr	Leu	Ser	Lys	Asp	Val	Asp	Phe		
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Glu	Glu	Gly	Lys	Leu	Thr	Asp	Thr	Glu	Ile	Lys	Ala	Leu	Leu	Leu	Asn		
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Ile	Ala	Glu	Leu	Leu	Arg	Asn	Pro	Lys	Ile	Leu	Asn	Gln	Ala	Gln	Gln		
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Cys	Glu	Ile	Asn	Gly	Tyr	Phe	Ile	Pro	Lys	Gly	Ala	Thr	Leu	Leu	Val		
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Glu	Phe	Asn	Pro	His	Arg	Phe	Leu	Pro	Gly	Gly	Glu	Lys	Pro	Asn	Val		
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Val	Ala	Thr	Leu	Val	His	Ala	Phe	Asp	Trp	Asp	Leu	Val	Asn	Gly	Gln		
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Arg	Ala	Val	Pro	Leu	Met	Leu	His	Pro	Lys	Pro	Arg	Leu	Gln	Pro	His		
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Leu	Tyr	Thr	Leu	Asn													
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<213> Jap. Morning Glory

<400> 21

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Gly	Pro	Lys	Pro	Trp	Pro	Val	Leu	Gly	Asn	Leu	Pro	His	Leu	Gly	Lys
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Lys	Pro	His	Gln	Ser	Ile	Ala	Ala	Met	Ala	Glu	Arg	Tyr	Gly	Pro	Leu
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Met	His	Leu	Arg	Leu	Gly	Phe	Val	Asp	Val	Val	Val	Ala	Ala	Ser	Ala
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Ala	Val	Ala	Ala	Gln	Phe	Leu	Lys	Val	His	Asp	Ser	Asn	Phe	Ser	Asn
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Arg	Pro	Pro	Asn	Ser	Gly	Ala	Glu	His	Ile	Ala	Tyr	Asn	Tyr	Gln	Asp
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Leu	Val	Phe	Ala	Pro	Tyr	Gly	Pro	Arg	Trp	Arg	Met	Leu	Arg	Lys	Ile
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Thr	Ser	Val	His	Leu	Phe	Ser	Ala	Lys	Ala	Leu	Asp	Asp	Phe	Cys	His
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Gly	Lys	Thr	Pro	Val	Lys	Leu	Gly	Gln	Leu	Leu	Asn	Val	Cys	Thr	Thr
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Lys	Cys	Val	Asn	Gln	His	Thr	Thr	Leu	Ser	Lys	Asp	Val	Asp	Phe	
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Leu	Ser	Thr	Leu	Ile	Arg	Leu	Lys	Asp	Asn	Gly	Ala	Asp	Met	Asp	Cys
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		290				295					300				
Leu	Phe	Thr	Ala	Gly	Thr	Asp	Thr	Ser	Ser	Ser	Thr	Val	Glu	Trp	Ala
305					310					315					320
Ile	Ala	Glu	Leu	Leu	Arg	Asn	Pro	Lys	Ile	Leu	Asn	Gln	Ala	Gln	Gln
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Glu	Leu	Asp	Leu	Val	Val	Gly	Gln	Asn	Gln	Leu	Val	Thr	Glu	Ser	Asp
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Leu	Thr	Asp	Leu	Pro	Phe	Leu	Gln	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg
		355					360					365			
Leu	His	Pro	Ser	Thr	Pro	Leu	Ser	Leu	Pro	Arg	Met	Gly	Ala	Gln	Gly
	370					375					380				
Cys	Glu	Ile	Asn	Gly	Tyr	Phe	Ile	Pro	Lys	Gly	Ala	Thr	Leu	Leu	Val
385					390					395					400
Asn	Val	Trp	Ala	Ile	Ala	Arg	Asp	Pro	Asn	Val	Trp	Thr	Asn	Pro	Leu
				405					410					415	
Glu	Phe	Asn	Pro	His	Arg	Phe	Leu	Pro	Gly	Gly	Glu	Lys	Pro	Asn	Val
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Asp	Ile	Lys	Gly	Asn	Asp	Phe	Glu	Val	Ile	Pro	Phe	Gly	Ala	Gly	Arg
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Arg Ile Cys Ser Gly Met Ser Leu Gly Ile Arg Met Val His Leu Leu
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 Val Ala Thr Leu Val His Ala Phe Asp Trp Asp Leu Val Asn Gly Gln
 465 470 475 480
 Ser Val Glu Thr Leu Asn Met Glu Glu Ala Tyr Gly Leu Thr Leu Gln
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 Leu Ala Glu Met Ala Lys Thr Tyr Gly Pro Leu Met His Leu Lys Phe
 20 25 30
 ggg ctt aag gac gcg gtg gtg gcg tcg tct gcg tcg gtg gca gag cag 144
 Gly Leu Lys Asp Ala Val Val Ala Ser Ser Ala Ser Val Ala Glu Gln
 35 40 45
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 Phe Leu Lys Lys His Asp Val Asn Phe Ser Asn Arg Pro Pro Asn Ser
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 Gly Ala Lys His Ile Ala Tyr Asn Tyr Gln Asp Leu Val Phe Ala Pro
 65 70 75 80
 tat gga ccc cgg tgg cgg ttg ctt agg aaa atc tgt tcc gtc cat ctt 288
 Tyr Gly Pro Arg Trp Arg Leu Leu Arg Lys Ile Cys Ser Val His Leu
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 ttc tcg tct aag gcc ttg gat gac ttt cag cat gtt cga cat gag gag 336
 Phe Ser Ser Lys Ala Leu Asp Asp Phe Gln His Val Arg His Glu Glu
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 Ile Cys Ile Leu Ile Arg Ala Ile Ala Ser Gly Gly His Ala Pro Val
 115 120 125
 aat tta ggc aag tta tta gga gtg tgc aca acc aat gcc ctg gca aga 432
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 130 135 140
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His	Ala	Asp	Glu	Phe	Lys	Ser	Met	Val	Val	Glu	Ile	Met	Val	Leu	Ala		
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Gly	Ala	Phe	Asn	Leu	Gly	Asp	Phe	Ile	Pro	Val	Leu	Asp	Trp	Phe	Asp		
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Asp	Ser	Asn	Ile	Asp	Gly	Gly	Asp	Glu	Gly	Thr	Lys	Leu	Thr	Asp	Thr		
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gaa	atc	aaa	gct	ctc	ctt	ttg	aac	ttg	ttc	ata	gcc	gga	aca	gac	act	816	
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Ser	Ser	Ser	Thr	Val	Glu	Trp	Ala	Met	Ala	Glu	Leu	Ile	Arg	Asn	Pro		
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gcc	gtc	atc	aaa	gag	act	ttc	agg	ctt	cat	cca	tcc	acc	cca	ctc	tct	1008	
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Ser	Glu	Gly	Ser	Thr	Leu	Leu	Val	Asn	Val	Trp	Ala	Ile	Ala	Arg	Asp		
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cca	aat	gcg	tgg	gcc	aat	cca	cta	gat	ttc	aac	ccg	act	cgt	ttc	ttg	1152	
Pro	Asn	Ala	Trp	Ala	Asn	Pro	Leu	Asp	Phe	Asn	Pro	Thr	Arg	Phe	Leu		
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Ala Gly Gly Glu Lys Pro Asn Val Asp Val Lys Gly Asn Asp Phe Glu
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Val Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Ala Gly Met Ser Leu
405 410 415

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Gly Ile Arg Met Val Gln Leu Val Thr Ala Ser Leu Val His Ser Phe
420 425 430

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435 440 445

gaa ggt tat gga cta acg ctt caa cga gct tca cct tta atc gtc cat 1392
Glu Gly Tyr Gly Leu Thr Leu Gln Arg Ala Ser Pro Leu Ile Val His
450 455 460

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Pro Lys Pro Arg Leu Ser Ala Gln Val Tyr Cys Met
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Phe Leu Lys Lys His Asp Val Asn Phe Ser Asn Arg Pro Pro Asn Ser
50 55 60
Gly Ala Lys His Ile Ala Tyr Asn Tyr Gln Asp Leu Val Phe Ala Pro
65 70 75 80
Tyr Gly Pro Arg Trp Arg Leu Leu Arg Lys Ile Cys Ser Val His Leu
85 90 95
Phe Ser Ser Lys Ala Leu Asp Asp Phe Gln His Val Arg His Glu Glu
100 105 110
Ile Cys Ile Leu Ile Arg Ala Ile Ala Ser Gly Gly His Ala Pro Val
115 120 125

Asn Leu Gly Lys Leu Leu Gly Val Cys Thr Thr Asn Ala Leu Ala Arg
130 135 140

Val Met Leu Gly Arg Arg Val Phe Glu Gly Asp Gly Gly Glu Asn Pro
145 150 155 160
His Ala Asp Glu Phe Lys Ser Met Val Val Glu Ile Met Val Leu Ala

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Met Leu Gly Arg Arg Val Phe Gly Asp Gly Ser Gly Gly Val Asp Pro	
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cag gcg gac gag ttc aaa tcc atg gtg gtg gaa atc atg gtg ttg gcc	193
Gln Ala Asp Glu Phe Lys Ser Met Val Val Glu Ile Met Val Leu Ala	
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Gly Ala Phe Asn Leu Gly Asp Phe Ile Pro Ala Leu Asp Trp Phe Asp	
65 70 75 80	
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Leu Gln Gly Ile Thr Ala Lys Met Lys Lys Val His Ala Arg Phe Asp	
85 90 95	
gcg ttc tta gac gcg atc ctt gag gag cac aaa tcc aac ggc tct cgc	337
Ala Phe Leu Asp Ala Ile Leu Glu Glu His Lys Ser Asn Gly Ser Arg	
100 105 110	
gga gct aag caa cac gtt gac ttg ctg agt atg ttg atc tcc ctt caa	385
Gly Ala Lys Gln His Val Asp Leu Leu Ser Met Leu Ile Ser Leu Gln	
115 120 125	
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Asp Asn Asn Ile Asp Gly Glu Ser Gly Ala Lys Leu Thr Asp Thr Glu	
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Ile Lys Ala Leu Leu Leu Asn Leu Phe Thr Ala Gly Thr Asp Thr Ser	
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Ser Ser Thr Val Glu Trp Ala Ile Ala Glu Leu Ile Arg Asn Pro Glu	
165 170 175	
gta ttg gtt caa gcc caa caa gag ctc gat aga gta gtt ggg cca agt	577
Val Leu Val Gln Ala Gln Gln Glu Leu Asp Arg Val Val Gly Pro Ser	
180 185 190	
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Arg Leu Val Thr Glu Ser Asp Leu Pro Gln Leu Ala Phe Leu Gln Ala	
195 200 205	
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Val Ile Lys Glu Thr Phe Arg Leu His Pro Ser Thr Pro Leu Ser Leu	
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Pro Arg Met Ala Ser Glu Gly Cys Glu Ile Asn Gly Tyr Ser Ile Pro	
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aag ggt tcg aca ttg ctc gtt aac gta tgg tcc ata gcc cgt gat cct	769
Lys Gly Ser Thr Leu Leu Val Asn Val Trp Ser Ile Ala Arg Asp Pro	
245 250 255	
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Ser Ile Trp Ala Asp Pro Leu Glu Phe Arg Pro Ala Arg Phe Leu Pro	
260 265 270	

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 Gly Gly Glu Lys Pro Asn Val Asp Val Arg Gly Asn Asp Phe Glu Val
 275 280 285
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 Ile Pro Phe Gly Ala Gly Arg Ile Cys Ala Gly Met Ser Leu Gly
 290 295 300
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 305 310 315 320
 tgg gat ttg ctg aat ggg atg agc cca gat aaa ctt gac atg gaa gaa 1009
 Trp Asp Leu Leu Asn Gly Met Ser Pro Asp Lys Leu Asp Met Glu Glu
 325 330 335
 gct tat ggg ctt aca ttg caa cgg gct tca cct ttg att gtc cac cca 1057
 Ala Tyr Gly Leu Thr Leu Gln Arg Ala Ser Pro Leu Ile Val His Pro
 340 345 350
 aag ccc agg ctt gct agc tct atg tat gtt aaa tga aattatgctg 1103
 Lys Pro Arg Leu Ala Ser Ser Met Tyr Val Lys
 355 360
 tgcgaataat tccttattta tagcaggaaa tgtcatcttg aattatgtgt aatgtttcttc 1163
 taacttttcga tggaagtgcga aaacaagttt tattaaaaaa aaaaaaaaaa a 1214

<210> 25
 <211> 363
 <212> PRT
 <213> Lisianthus

<400> 25
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 Met Leu Gly Arg Arg Val Phe Gly Asp Gly Ser Gly Gly Val Asp Pro
 35 40 45
 Gln Ala Asp Glu Phe Lys Ser Met Val Val Glu Ile Met Val Leu Ala
 50 55 60
 Gly Ala Phe Asn Leu Gly Asp Phe Ile Pro Ala Leu Asp Trp Phe Asp
 65 70 75 80
 Leu Gln Gly Ile Thr Ala Lys Met Lys Lys Val His Ala Arg Phe Asp
 85 90 95
 Ala Phe Leu Asp Ala Ile Leu Glu Glu His Lys Ser Asn Gly Ser Arg
 100 105 110
 Gly Ala Lys Gln His Val Asp Leu Leu Ser Met Leu Ile Ser Leu Gln
 115 120 125
 Asp Asn Asn Ile Asp Gly Glu Ser Gly Ala Lys Leu Thr Asp Thr Glu
 130 135 140
 Ile Lys Ala Leu Leu Leu Asn Leu Phe Thr Ala Gly Thr Asp Thr Ser
 145 150 155 160
 Ser Ser Thr Val Glu Trp Ala Ile Ala Glu Leu Ile Arg Asn Pro Glu
 165 170 175
 Val Leu Val Gln Ala Gln Gln Glu Leu Asp Arg Val Val Gly Pro Ser
 180 185 190
 Arg Leu Val Thr Glu Ser Asp Leu Pro Gln Leu Ala Phe Leu Gln Ala

	195		200		205										
Val	Ile	Lys	Glu	Thr	Phe	Arg	Leu	His	Pro	Ser	Thr	Pro	Leu	Ser	Leu
	210					215					220				
Pro	Arg	Met	Ala	Ser	Glu	Gly	Cys	Glu	Ile	Asn	Gly	Tyr	Ser	Ile	Pro
225					230					235					240
Lys	Gly	Ser	Thr	Leu	Leu	Val	Asn	Val	Trp	Ser	Ile	Ala	Arg	Asp	Pro
				245					250					255	
Ser	Ile	Trp	Ala	Asp	Pro	Leu	Glu	Phe	Arg	Pro	Ala	Arg	Phe	Leu	Pro
			260					265					270		
Gly	Gly	Glu	Lys	Pro	Asn	Val	Asp	Val	Arg	Gly	Asn	Asp	Phe	Glu	Val
		275					280					285			
Ile	Pro	Phe	Gly	Ala	Gly	Arg	Arg	Ile	Cys	Ala	Gly	Met	Ser	Leu	Gly
	290					295					300				
Leu	Arg	Met	Val	Gln	Leu	Ser	Thr	Ala	Thr	Leu	Val	His	Ser	Phe	Asn
305					310					315					320
Trp	Asp	Leu	Leu	Asn	Gly	Met	Ser	Pro	Asp	Lys	Leu	Asp	Met	Glu	Glu
				325					330					335	
Ala	Tyr	Gly	Leu	Thr	Leu	Gln	Arg	Ala	Ser	Pro	Leu	Ile	Val	His	Pro
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ctg gga ctg ttt ttc act tgg ttc ttg gtg aat gga ctc atg tca ctt 103
 Leu Gly Leu Phe Phe Thr Trp Phe Leu Val Asn Gly Leu Met Ser Leu
 10 15 20

cga aga aga aaa atc tct aag aaa ctt cca cca ggt cca ttt cct ttg 151
 Arg Arg Arg Lys Ile Ser Lys Lys Leu Pro Pro Gly Pro Phe Pro Leu
 25 30 35

cct atc atc gga aat ctt cac tta ctt ggt aat cat cct cac aaa tca 199
 Pro Ile Ile Gly Asn Leu His Leu Leu Gly Asn His Pro His Lys Ser
 40 45 50 55

ctt gct caa ctt gca aaa att cat ggt cct att atg aat ctc aaa tta 247
 Leu Ala Gln Leu Ala Lys Ile His Gly Pro Ile Met Asn Leu Lys Leu
 60 65 70

ggc caa cta aac aca gtg gtc att tca tca tca gtc gtg gca aga gaa 295
 Gly Gln Leu Asn Thr Val Val Ile Ser Ser Ser Val Val Ala Arg Glu
 75 80 85

gtc ttg caa aaa caa gac tta aca ttt tcc aat agg ttt gtc ccg gac 343
 Val Leu Gln Lys Gln Asp Leu Thr Phe Ser Asn Arg Phe Val Pro Asp

90	95	100	
gta gtc cat gtc cga aat cac tcc gat ttt tct gtt gtt tgg tta cca Val Val His Val Arg Asn His Ser Asp Phe Ser Val Val Trp Leu Pro 105 110 115			391
gtc aat tct cga tgg aaa acg ctt cgc aaa atc atg aac tct agc atc Val Asn Ser Arg Trp Lys Thr Leu Arg Lys Ile Met Asn Ser Ser Ile 120 125 130 135			439
ttt tct ggt aac aag ctt gat ggt aat caa cat ctg agg tct aaa aag Phe Ser Gly Asn Lys Leu Asp Gly Asn Gln His Leu Arg Ser Lys Lys 140 145 150			487
gtc caa gag tta att gat tat tgt caa aag tgt gcc aag aat ggc gaa Val Gln Glu Leu Ile Asp Tyr Cys Gln Lys Cys Ala Lys Asn Gly Glu 155 160 165			535
gca gtg gat ata gga aga gca act ttt gga act act ttg aat ttg cta Ala Val Asp Ile Gly Arg Ala Thr Phe Gly Thr Thr Leu Asn Leu Leu 170 175 180			583
tcc aac acc att ttc tct aaa gat ttg act aat ccg ttt tct gat tct Ser Asn Thr Ile Phe Ser Lys Asp Leu Thr Asn Pro Phe Ser Asp Ser 185 190 195			631
gct aaa gag ttt aag gaa ttg gtt tgg aac att atg gtt gag gct gga Ala Lys Glu Phe Lys Glu Leu Val Trp Asn Ile Met Val Glu Ala Gly 200 205 210 215			679
aaa ccc aat ttg gtg gac tac ttt cct ttc ctt gag aaa att gat ccg Lys Pro Asn Leu Val Asp Tyr Phe Pro Phe Leu Glu Lys Ile Asp Pro 220 225 230			727
caa ggt ata aag cga cgc atg act aat aat ttt act aag ttt ctt ggc Gln Gly Ile Lys Arg Arg Met Thr Asn Asn Phe Thr Lys Phe Leu Gly 235 240 245			775
ctt atc agc ggt ttg att gat gac cgg tta aag gaa agg aat cta agg Leu Ile Ser Gly Leu Ile Asp Asp Arg Leu Lys Glu Arg Asn Leu Arg 250 255 260			823
gac aat gca aat att gat gtt tta gac gcc ctt ctc aac att agc caa Asp Asn Ala Asn Ile Asp Val Leu Asp Ala Leu Leu Asn Ile Ser Gln 265 270 275			871
gag aac cca gaa gag att gac agg aat caa atc gag cag ttg tgt ctg Glu Asn Pro Glu Glu Ile Asp Arg Asn Gln Ile Glu Gln Leu Cys Leu 280 285 290 295			919
gac ttg ttt gca gca ggg act gat act aca tcg aat acc ttg gag tgg Asp Leu Phe Ala Ala Gly Thr Asp Thr Thr Ser Asn Thr Leu Glu Trp 300 305 310			967
gca atg gca gaa cta ctt cag aat cca cac aca ttg cag aaa gca caa Ala Met Ala Glu Leu Leu Gln Asn Pro His Thr Leu Gln Lys Ala Gln 315 320 325			1015
gaa gaa ctt gca caa gtc att ggt aaa ggc aaa caa gta gaa gaa gca Glu Glu Leu Ala Gln Val Ile Gly Lys Gly Lys Gln Val Glu Glu Ala 330 335 340 345			1063

330	335	340	
gat gtt gga cga cta cct tac ttg cga tgc ata gtg aaa gaa acc tta			1111
Asp Val Gly Arg Leu Pro Tyr Leu Arg Cys Ile Val Lys Glu Thr Leu			
345	350	355	
cga ata cac cca gcg gct cct ctc tta att cca cgt aaa gtg gag gaa			1159
Arg Ile His Pro Ala Ala Pro Leu Leu Ile Pro Arg Lys Val Glu Glu			
360	365	370 375	
gac gtt gag ttg tct acc tat att att cca aag gat tca caa gtt cta			1207
Asp Val Glu Leu Ser Thr Tyr Ile Ile Pro Lys Asp Ser Gln Val Leu			
	380	385 390	
gtg aac gta tgg gca att gga cgc aac tct gat cta tgg gaa aat cct			1255
Val Asn Val Trp Ala Ile Gly Arg Asn Ser Asp Leu Trp Glu Asn Pro			
	395	400 405	
ttg gtc ttt aag cca gaa agg ttt tgg gag tca gaa ata gat atc cga			1303
Leu Val Phe Lys Pro Glu Arg Phe Trp Glu Ser Glu Ile Asp Ile Arg			
	410	415 420	
ggt cga gat ttt gaa ctc att cca ttt ggt gct ggt cga aga att tgc			1351
Gly Arg Asp Phe Glu Leu Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys			
	425	430 435	
cct gga ttg cct ttg gct atg agg atg att cca gta gca cta ggt tca			1399
Pro Gly Leu Pro Leu Ala Met Arg Met Ile Pro Val Ala Leu Gly Ser			
	440	445 450 455	
ttg cta aac tca ttt aat tgg aaa cta tat ggt gga att gca cct aaa			1447
Leu Leu Asn Ser Phe Asn Trp Lys Leu Tyr Gly Gly Ile Ala Pro Lys			
	460	465 470	
gat ttg gac atg cag gaa aag ttt ggc att acc ttg gcg aaa gcc caa			1495
Asp Leu Asp Met Gln Glu Lys Phe Gly Ile Thr Leu Ala Lys Ala Gln			
	475	480 485	
cct ctg cta gct atc cca act ccc ctg tag ctatagggat aaattaagtt			1545
Pro Leu Leu Ala Ile Pro Thr Pro Leu			
	490	495	
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tgctttaccg ttggatgatg gaaagaaata tctatagctt tgggtttggt tagtttgcac 1665			
ataaaaattg aatgaatgga ataccatgga gttataagaa ataataagac tatgattctt 1725			
accctacttg aacaatgaca tggctatttc ac 1757			

<210> 27

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide

<400> 27
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<210> 28
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:oligonucleotide

<400> 28
 tttttttttt tttttttc 18

<210> 29
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:oligonucleotide

<400> 29
 tttttttttt tttttttg 18

<210> 30
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide representing a conserved region in plant cytochrome p450 sequences.

<400> 30
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 1 5

<210> 31
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
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 <222> (6)
 <223> n is inosine

<220>
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 <222> (9)
 <223> n is inosine

<220>
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 <222> (12)
 <223> n is inosine

 <220>
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 <222> (15)
 <223> n is inosine

 <400> 31
 tgggcnatng gnmnggaycc

20

<210> 32
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide representing a conserved region in plant cytochrome p450 sequences.

<400> 32
 Phe Arg Pro Glu Arg Phe
 1 5

<210> 33
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
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<220>
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 <223> n is inosine

<220>
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 <223> n is inosine

<400> 33
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22

<210> 34
 <211> 32
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<220>
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<220>
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<223> n is inosine

<220>
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<220>
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<223> n is inosine

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<400> 34
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32

<210> 35
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<212> PRT
<213> Artificial Sequence

<220>
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<220>
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<222> (3)
<223> Xaa can be any amino acid.

<400> 35
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1 5

<210> 36
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
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<223> n is inosine

<220>
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<223> n is inosine

<400> 36
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20

<210> 37
<211> 28
<212> DNA
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<220>
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<400> 37
ccacacgagt agttttggca tttgaccc

28

<210> 38
<211> 25
<212> DNA
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<220>
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<400> 38
gtcttggaca tcacacttca atctg

25

<210> 39
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide

<400> 39
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17

<210> 40
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<220>
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<223> n is inosine

<220>
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 <223> n is inosine

<400> 40
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32

<210> 41
 <211> 496
 <212> PRT
 <213> Petunia sp.

<400> 41

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			20					25					30		
Pro	Pro	Gly	Pro	Phe	Pro	Leu	Pro	Ile	Ile	Gly	Asn	Leu	His	Leu	Leu
		35					40					45			
Gly	Asn	His	Pro	His	Lys	Ser	Leu	Ala	Gln	Leu	Ala	Lys	Ile	His	Gly
	50					55				60					
Pro	Ile	Met	Asn	Leu	Lys	Leu	Gly	Gln	Leu	Asn	Thr	Val	Val	Ile	Ser
65					70					75					80
Ser	Ser	Val	Val	Ala	Arg	Glu	Val	Leu	Gln	Lys	Gln	Asp	Leu	Thr	Phe
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Ser	Asn	Arg	Phe	Val	Pro	Asp	Val	Val	His	Val	Arg	Asn	His	Ser	Asp
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Phe	Ser	Val	Val	Trp	Leu	Pro	Val	Asn	Ser	Arg	Trp	Lys	Thr	Leu	Arg
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Lys	Ile	Met	Asn	Ser	Ser	Ile	Phe	Ser	Gly	Asn	Lys	Leu	Asp	Gly	Asn
	130					135						140			
Gln	His	Leu	Arg	Ser	Lys	Lys	Val	Gln	Glu	Leu	Ile	Asp	Tyr	Cys	Gln
145					150					155					160
Lys	Cys	Ala	Lys	Asn	Gly	Glu	Ala	Val	Asp	Ile	Gly	Arg	Ala	Thr	Phe
			165						170					175	
Gly	Thr	Thr	Leu	Asn	Leu	Leu	Ser	Asn	Thr	Ile	Phe	Ser	Lys	Asp	Leu
			180					185					190		
Thr	Asn	Pro	Phe	Ser	Asp	Ser	Ala	Lys	Glu	Phe	Lys	Glu	Leu	Val	Trp
	195						200					205			
Asn	Ile	Met	Val	Glu	Ala	Gly	Lys	Pro	Asn	Leu	Val	Asp	Tyr	Phe	Pro
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Phe	Leu	Glu	Lys	Ile	Asp	Pro	Gln	Gly	Ile	Lys	Arg	Arg	Met	Thr	Asn
225					230					235					240
Asn	Phe	Thr	Lys	Phe	Leu	Gly	Leu	Ile	Ser	Gly	Leu	Ile	Asp	Asp	Arg
			245					250					255		
Leu	Lys	Glu	Arg	Asn	Leu	Arg	Asp	Asn	Ala	Asn	Ile	Asp	Val	Leu	Asp
		260						265				270			
Ala	Leu	Leu	Asn	Ile	Ser	Gln	Glu	Asn	Pro	Glu	Glu	Ile	Asp	Arg	Asn
	275						280					285			
Gln	Ile	Glu	Gln	Leu	Cys	Leu	Asp	Leu	Phe	Ala	Ala	Gly	Thr	Asp	Thr
	290					295					300				
Thr	Ser	Asn	Thr	Leu	Glu	Trp	Ala	Met	Ala	Glu	Leu	Leu	Gln	Asn	Pro
305					310					315					320
His	Thr	Leu	Gln	Lys	Ala	Gln	Glu	Glu	Leu	Ala	Gln	Val	Ile	Gly	Lys
			325						330					335	
Gly	Lys	Gln	Val	Glu	Glu	Ala	Asp	Val	Gly	Arg	Leu	Pro	Tyr	Leu	Arg

340 345 350
 Cys Ile Val Lys Glu Thr Leu Arg Ile His Pro Ala Ala Pro Leu Leu
 355 360 365
 Ile Pro Arg Lys Val Glu Glu Asp Val Glu Leu Ser Thr Tyr Ile Ile
 370 375 380
 Pro Lys Asp Ser Gln Val Leu Val Asn Val Trp Ala Ile Gly Arg Asn
 385 390 395 400
 Ser Asp Leu Trp Glu Asn Pro Leu Val Phe Lys Pro Glu Arg Phe Trp
 405 410 415
 Glu Ser Glu Ile Asp Ile Arg Gly Arg Asp Phe Glu Leu Ile Pro Phe
 420 425 430
 Gly Ala Gly Arg Arg Ile Cys Pro Gly Leu Pro Leu Ala Met Arg Met
 435 440 445
 Ile Pro Val Ala Leu Gly Ser Leu Leu Asn Ser Phe Asn Trp Lys Leu
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 Tyr Gly Gly Ile Ala Pro Lys Asp Leu Asp Met Gln Glu Lys Phe Gly
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 Ile Thr Leu Ala Lys Ala Gln Pro Leu Leu Ala Ile Pro Thr Pro Leu
 485 490 495

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 <211> 513
 <212> PRT
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 Leu Pro Pro Gly Pro Asn Pro Trp Pro Ile Ile Gly Asn Leu Pro His
 35 40 45
 Met Gly Thr Lys Pro His Arg Thr Leu Ser Ala Met Val Thr Thr Tyr
 50 55 60
 Gly Pro Ile Leu His Leu Arg Leu Gly Phe Val Asp Val Val Val Ala
 65 70 75 80
 Ala Ser Lys Ser Val Ala Glu Gln Phe Leu Lys Ile His Asp Ala Asn
 85 90 95
 Phe Ala Ser Arg Pro Pro Asn Ser Gly Ala Lys His Met Ala Tyr Asn
 100 105 110
 Tyr Gln Asp Leu Val Phe Ala Pro Tyr Gly His Arg Trp Arg Leu Leu
 115 120 125
 Arg Lys Ile Ser Ser Val His Leu Phe Ser Ala Lys Ala Leu Glu Asp
 130 135 140
 Phe Lys His Val Arg Gln Glu Glu Val Gly Thr Leu Thr Arg Glu Leu
 145 150 155 160
 Val Arg Val Gly Thr Lys Pro Val Asn Leu Gly Gln Leu Val Asn Met
 165 170 175
 Cys Val Val Asn Ala Leu Gly Arg Glu Met Ile Gly Arg Arg Leu Phe

180					185					190					
Gly	Ala	Asp	Ala	Asp	His	Lys	Ala	Asp	Glu	Phe	Arg	Ser	Met	Val	Thr
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Glu	Met	Met	Ala	Leu	Ala	Gly	Val	Phe	Asn	Ile	Gly	Asp	Phe	Val	Pro
	210					215					220				
Ser	Leu	Asp	Trp	Leu	Asp	Leu	Gln	Gly	Val	Ala	Gly	Lys	Met	Lys	Arg
	225					230					235				240
Leu	His	Lys	Arg	Phe	Asp	Ala	Phe	Leu	Ser	Ser	Ile	Leu	Lys	Glu	His
				245					250					255	
Glu	Met	Asn	Gly	Gln	Asp	Gln	Lys	His	Thr	Asp	Met	Leu	Ser	Thr	Leu
			260					265					270		
Ile	Ser	Leu	Lys	Gly	Thr	Asp	Leu	Asp	Gly	Asp	Gly	Gly	Ser	Leu	Thr
		275					280					285			
Asp	Thr	Glu	Ile	Lys	Ala	Leu	Leu	Leu	Asn	Met	Phe	Thr	Ala	Gly	Thr
	290					295					300				
Asp	Thr	Ser	Ala	Ser	Thr	Val	Asp	Trp	Ala	Ile	Ala	Glu	Leu	Ile	Arg
	305					310					315				320
His	Pro	Asp	Ile	Met	Val	Lys	Ala	Gln	Glu	Glu	Leu	Asp	Ile	Val	Val
			325						330					335	
Gly	Arg	Asp	Arg	Pro	Val	Asn	Glu	Ser	Asp	Ile	Ala	Gln	Leu	Pro	Tyr
		340						345					350		
Leu	Gln	Ala	Val	Ile	Lys	Glu	Asn	Phe	Arg	Leu	His	Pro	Pro	Thr	Pro
	355						360					365			
Leu	Ser	Leu	Pro	His	Ile	Ala	Ser	Glu	Ser	Cys	Glu	Ile	Asn	Gly	Tyr
	370					375					380				
His	Ile	Pro	Lys	Gly	Ser	Thr	Leu	Leu	Thr	Asn	Ile	Trp	Ala	Ile	Ala
	385					390					395				400
Arg	Asp	Pro	Asp	Gln	Trp	Ser	Asp	Pro	Leu	Ala	Phe	Lys	Pro	Glu	Arg
			405						410					415	
Phe	Leu	Pro	Gly	Gly	Glu	Lys	Ser	Gly	Val	Asp	Val	Lys	Gly	Ser	Asp
			420					425					430		
Phe	Glu	Leu	Ile	Pro	Phe	Gly	Ala	Gly	Arg	Arg	Ile	Cys	Ala	Gly	Leu
	435						440					445			
Ser	Leu	Gly	Leu	Arg	Thr	Ile	Gln	Phe	Leu	Thr	Ala	Thr	Leu	Val	Gln
	450					455					460				
Gly	Phe	Asp	Trp	Glu	Leu	Ala	Gly	Gly	Val	Thr	Pro	Glu	Lys	Leu	Asn
	465					470					475				480
Met	Glu	Glu	Ser	Tyr	Gly	Leu	Thr	Leu	Gln	Arg	Ala	Val	Pro	Leu	Val
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Gly

<210> 43
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<212> PRT
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<400> 43
Arg Pro Pro Asn Ser Gly Ala
1 5

<210> 44
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<213> Arabidopsis thaliana

<220>
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<223> Xaa can be any amino acid.

<220>
<221> UNSURE
<222> (10)
<223> Xaa cab be any amino acid.

<220>
<221> UNSURE
<222> (15)
<223> Xaa can be any amino acid.

<400> 44
Arg Pro Pro Asn Ser Gly Ala Xaa His Xaa Ala Tyr Asn Tyr Xaa Asp
1 5 10 15

Leu

<210> 45
<211> 521
<212> PRT
<213> Arabidopsis thaliana

<220>
<221> UNSURE
<222> (8)
<223> Xaa can be any amino acid.

<220>
<221> UNSURE
<222> (10)
<223> Xaa cab be any amino acid.

<220>

<221> UNSURE

<222> (15)

<223> Xaa can be any amino acid.

<220>

<221> UNSURE

<222> (18)..(517)

<223> Xaa can be any amino acid. Positions 18-517
can be 0-500 amino acids.

<400> 45

Arg Pro Pro Asn Ser Gly Ala Xaa His Xaa Ala Tyr Asn Tyr Xaa Asp
1 5 10 15

Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40 45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
65 70 75 80

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
85 90 95

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
115 120 125

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
130 135 140

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
145 150 155 160

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
165 170 175

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
180 185 190

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195 200 205

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
210 215 220

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
225 230 235 240

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
245 250 255

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 260 265 270

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 275 280 285

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 290 295 300

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 305 310 315 320

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 325 330 335

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 340 345 350

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 355 360 365

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 370 375 380

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 385 390 395 400

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 405 410 415

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 420 425 430

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 435 440 445

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 450 455 460

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 465 470 475 480

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 485 490 495

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 500 505 510

Xaa Xaa Xaa Xaa Xaa Gly Gly Glu Lys
 515 520